REMARKS

Claims 1-5, 7, 10, 14, 16-18, and 32-34 are withdrawn from consideration as being directed to non-elected inventions. Claims 6, 12, and 19-31 are pending. Claim 6 was objected to because it depends from a claim that was withdrawn as being directed to a nonelected invention. Claims 6, 12, and 19-31 were rejected under 35 U.S.C. § 112, first paragraph. Each of these issues is addressed below.

Claim Amendments

Dependent claim 6 has been amended to its independent form. In addition, claims 19, 22, 25, and 29, as amended, are now directed to the elected invention. Claims 20 and 21 have been amended to clarify the claim language. A "marked-up" version of the amended claims and a clean version of all pending claims are enclosed.

Drawings

The drawings were objected to by the Draftsperson as informal. Applicants note that they did not receive a form PTO 948 indicating the reasons why the drawings were held as being informal with the current Office Action and hereby request that a copy of this form be provided with the next action. In addition, Applicants agree to provide formal drawings upon an indication of allowable subject matter.

Claim Objections

Claim 6 was objected to for being directed to a non-elected invention. This claim has been amended to overcome this objection.

Rejections under 35 U.S.C. § 112, first paragraph

Claims 6, 12, and 19-31 were rejected under 35 U.S.C. § 112, first paragraph, on the basis that the disclosure in applicants' specification (1) fails to provide a written description of the claimed invention and (2) is not commensurate in scope with the claimed invention. For the following reasons, each of these rejections is respectfully traversed.

Written Description

Claims 6, 12, and 19-31 stand rejected, under 35 U.S.C. § 112, first paragraph, as containing subject matter that was not described in the specification in such a way as to convey to one skilled in the relevant art that the inventors had possession of the claimed invention. The claims in question are generally directed to products and methods that include the inventors' novel gene family encoding grapevine leafroll virus type 3 proteinases that, when expressed in a plant or plant component, confer viral disease resistance on the plant or plant component.

More particularly, the Office Action asserts that,

> the specification does not set forth any specific structural or physical characteristics of the claimed isolated nucleic acids that define their function, such as the identification of specific

> nucleotides whose alteration affects the proteinase function of the protein they encode. The specification only discloses that ORF1a (SEQ ID NO:4) has homology to a known viral proteinase (pages 20-22 *Example 1*, page 6 lines 11-12, page 7 lines 23-28). The identities of the claimed isolated nucleic acids and expression vectors, host cells, and transgenic plants are uncertain. One skilled in the art could not predict what the structure and function of the claimed isolated nucleic acids and expression vectors, host cells, and transgenic plants would be. The physical features of the claimed isolated nucleic acids and expression vectors, host cells, and transgenic plants cannot be ascertained in the absence of information about their functional activities.

To support this assertion, the Office relies on the Federal Circuit's opinion in *Regents of the Univ. of California. v. Eli Lilly and Co.,* 43 U.S.P.Q.2d 1398 (Fed. Cir. 1997) for the proposition that :

> The name cDNA is not in itself a written description of that DNA; it conveys no distinguishing information concerning its identity. While the example provides a process for obtaining human insulin-encoding cDNA, there is no further information in the patent pertaining to that cDNA's relevant structural or physical characteristics; in other words, it thus does not describe human insulin cDNA . . . Accordingly, the specification does not provide a written description of the invention . . .

For the following reasons, this basis of the § 112 rejection is respectfully traversed.

Applicants point out that their patent specification does not need to describe exactly all the subject matter that is claimed. *In re Daniels*, 114 F.3d 1452, 46 U.S.P.Q.2d 1788 (Fed. Cir. 1998); *Ralston Purina Co. v. Far-Mar-Co., Inc.*, 772 F.2d 1570, 227 U.S.P.Q. 117 (Fed. Cir. 1985). Rather, applicants need only communicate to those skilled in the art that the claimed subject matter is intended to be part of their

invention. As stated by the Federal Circuit in *Martin v. Mayer*, 823 F.2d 500, 3 U.S.P.Q.2d 1333 (Fed. Cir. 1987):

> [T]he specification must 'convey clearly to those skilled in the art to whom it is addressed...the information that [the inventor] has invented the specific subject matter later claimed.'

Moreover, the M.P.E.P. § 2163.02 (Eighth Edition, August 2001) states:

> [A]n objective standard for determining compliance with the written description requirement is, "does the description clearly allow persons of ordinary skill in the art to recognize that he or she invented what is claimed (emphasis added)."

In applying this standard, the Federal Circuit has held that the specification must convey with reasonable clarity to a skilled artisan that the inventor "was in possession of the invention" at the time of filing. *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 19 U.S.P.Q.2d 1111 (Fed. Cir. 1991). Moreover, in *Lilly*, the Federal Circuit acknowledged that "every species in a genus need not be described in order that a genus meets the written description requirement." 43 U.S.P.Q.2d at 1405 (citing *Utter v. Hiraga*, 845 F.2d 993, 6 U.S.P.Q.2d 1709 (Fed. Cir. 1988) ("A specification may, within the meaning of § 112, ¶ 1, contain a written description of a broadly claimed invention without describing all species that claim encompasses.") The *Lilly* court further acknowledged that "it may not be necessary to enumerate a plurality of species if a genus is sufficiently identified ... by other appropriate language." *Lilly*, 119 F.3d at 1569.

Applicants have plainly met these standards since their specification would certainly indicate to one of ordinary skill in the art that applicants discovered a family of

related nucleic acid molecules encoding grapevine leafroll type 3 viral proteinases, from a variety of strains of grapevine leafroll virus type 3 as currently claimed.

Applicants' specification clearly describes to the skilled worker what is claimed. For example, with respect to claim 6, the specification, for example, at page 7 (lines 23-28), teaches the presence of a proteinase domain within a polypeptide encoded by the claimed gene family. In particular, applicants submit that, even though the claimed invention is exemplified by a single grapevine leafroll virus type 3 proteinase described in the present specification, one of skill in the art reading this specification would have readily recognized that this gene was merely provided for the purpose of illustrating the invention and that applicants' invention included any grapevine leafroll virus type 3 gene encoding a proteinase polypeptide. It is this description that clearly conveys applicants' invention to those persons of skill in the art. This description also allows the skilled worker to identify and recognize other species falling within the present claims. Clearly, based on this description, one skilled in the art would recognize that applicants' invention encompassed—not one gene—but a family of genes encoding grapevine leafroll virus type 3 proteinase polypeptides, and, on this basis alone, the written description rejection may be withdrawn.

Moreover, applicants submit that their specification provides a written description of the presently claimed invention in sufficient detail to satisfy the standard set by the Federal Circuit in *Lilly,* 43 U.S.P.Q.2d 1398. In particular, this case specifically states that the written description of a genus of DNA may be achieved by a "recitation of

structural features common to members of the genus." *Lilly,* 43 U.S.P.Q.2d 1398, 1406.

Applicants point out that, contrary to the assertion in the present Office Action, the description of the claimed invention in applicants' specification does not rely simply on the disclosed sequence of the grapevine leafroll virus type 3 proteinase gene. Rather, the present specification describes a class of grapevine leafroll virus type 3 proteinase genes on the basis of a specific structural feature —a proteinase motif—. Applicants' specification therefore provides a description of the class of DNA molecules encompassed by the present claims in a form entirely consistent with the standard set out in *Lilly*, and, on this basis, the § 112 rejection should therefore be withdrawn.

With respect to claim 12, and its dependent claims 19-31, applicants' specification clearly describes the claimed invention using "other appropriate language." Applicants' specification, for example, describes a nucleic acid molecule that hybridizes to the complement of SEQ ID NO: 4 under highly stringent conditions. Exemplary high stringency conditions are provided in the specification at page 19, line 25, to page 20, line 3, and are also known to those skilled in the art. In addition, the specification describes that SEQ ID NO:4 encodes a polypeptide having a proteinase domain (e.g., at page 7, lines 23-25).

Applicants' specification also satisfies the written description requirement as set forth in the U.S. Patent & Trademark Office's Written Description Guidelines (http://www.uspto.gov/web/menu/offices/pac/writtendesc.pdf; "the Guidelines"). In particular, the Guidelines provide an example (Example 9:Hybridization), where a single

cDNA species which encodes a protein that binds to a dopamine receptor and stimulates adenylate cyclase is disclosed in the specification. The claim, in Example 9, is directed to a genus of nucleic acids all of which must hybridize under high stringency conditions with the disclosed cDNA and must encode a protein with a specific activity.[1] In concluding that the written description requirement was satisfied in this Example, the Guidelines state:

> [A] person of skill in the art would not expect substantial variation among species encompassed within the scope of the claims because the highly stringent hybridization conditions set forth in the claim yield structurally similar DNAs. Thus, a representative number of species is disclosed, since highly stringent hybridization conditions in combination with the coding function of DNA and the level of skill and knowledge in the art are adequate to determine that applicant was in possession of the claimed invention. (Emphasis added.)

The facts of the present case are squarely within these Guidelines. Applicants' claim is directed to a nucleic acid molecule that specifically hybridizes under highly stringent conditions to the complement of the sequence set forth in SEQ ID NO: 4, wherein the nucleic acid molecule encodes a protein having proteinase activity. As in Example 9, applicants' specification describes (i) at least a single species of a nucleic acid molecule falling within the scope of the claimed genus and (ii) an activity of the protein, proteinase activity, encoded by the nucleic acid molecule. A person of ordinary skill in

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[1] In Example 9, the claim in question reads: "An isolated nucleic acid that specifically hybridizes under highly stringent conditions to the complement of the sequence set forth in SEQ ID NO: 1, wherein said nucleic acid encodes a protein that binds to a dopamine receptor and stimulates adenylate cyclase activity."

the art would not expect substantial variation among species encompassed with the scope of the invention as claimed. The high stringency hybridization requirement necessarily yields structurally similar nucleic acids which, when combined with the functionality requirement, describes a genus of nucleic acid molecules. Therefore, in this case, as in Example 9, the single disclosed species is representative of the genus.

Furthermore, applicants submit that the claimed expression vectors, host cells, and grape plants are also adequately described in the specification. Exemplary expression vectors are described at page 10, line 5, to page 12, line 24; exemplary host cells are described at page 12, lines 25-30; and exemplary plants into which a vector of the invention may be introduced are provided at page 14, line 3, to page 15, line 23.

In sum, there can be no question that applicants were in possession of the claimed genus at the time their application was filed, and that one skilled in the art would recognize applicants' disclosure as a description of the invention defined by the present claims. As a result, applicants' specification clearly satisfies the written description requirement, as set forth by the case law and the M.P.E.P., and applicants request reconsideration and withdrawal of this basis for the § 112 rejection.

Scope of Enablement

Claims 6, 12, and 19-31 also stand rejected under § 112, first paragraph as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly

connected, to make and/or use the invention. More specifically, the Office Action states:

> [T]he specification does not provide any definitive evidence that SEQ ID NO:4, or any sequence that hybridizes to SEQ ID NO:4, encodes a functional proteinase, such as demonstrating proteinase activity in vitro using a recombinant protein encoded by SEQ ID NO:4. In addition, the specification does not teach any examples of how to make or use expression vectors, host cells, or transgenic plants comprising the claimed isolated nucleic acids. Finally, the specification does not disclose whether transforming a plant cell with the claimed isolated nucleic acids would confer viral disease resistance to a transformed plant or component.

For the following reasons, applicants respectfully traverse this ground for the rejection.

Applicants first point out that the Federal Circuit has made clear the level of teaching needed to enable a claim with respect to the prior art, and has stated that a patent need not reiterate techniques known to skilled workers in a particular area of technology. *See Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 231 U.S.P.Q. 81 (Fed. Cir. 1986), *cert. denied*, 480 U.S. 947 (1987); *In re Wands*, 858 F.2d 731, 8 U.S.P.Q.2d 1400 (Fed Cir. 1988); *Spectra-Physics, Inc. v. Coherent, Inc.*, 827 F.2d 1524, 3 U.S.P.Q.2d 1737 (Fed. Cir. 1987), *cert. denied*, 484 U.S. 954 (1987) ("A patent need not teach, and preferably omits, what is well known in the art."); *see also Paperless Accounting, Inc. v. Bay Area Rapid Transit Sys.*, 804 F.2d 659, 231 U.S.P.Q. 649 (Fed. Cir. 1986) ("A patent applicant need not include in the specification that which is already known to and available to the public.").

In view of this standard, applicants submit that, given the teaching of the specification and the level of skill in the art at the time the present application was filed,

(1) one skilled in the art would have reasonably understood how to isolate additional grapevine leafroll virus type 3 proteinase genes falling within the scope of the present claims using standard gene cloning methods and (2) the determination of whether such genes conferred viral disease resistance on a plant or plant component would not constitute undue experimentation.

First, applicants point out that, having access to applicants' newly disclosed grapevine leafroll virus type 3 proteinase sequence, one skilled in the art could identify additional nucleic acid molecules encoding such polypeptides from virtually any strain of grapevine leafroll type 3 virus absent "undue experimentation," simply by following the teachings found in applicants' specification in combination with standard methods known in the art at the time of applicants' invention. On this point, the Examiner is referred to the case of *In re Wands* (858 F.2d 731, 8 U.S.P.Q.2d 1400 (Fed. Cir. 1988)), which sets forth the CAFC standard for enablement in the biotechnology arts. *Wands* holds that an invention is enabled so long as the teaching of the specification provides the invention without undue experimentation. *Wands* states that:

> the test [for determining whether experimentation is undue] is not merely quantitative, since a considerable amount of experimentation is permissible, if it is merely routine or if the specification in question provides a reasonable amount of guidance with respect to the direction in which the experimentation should proceed (emphasis added).

Applying this standard to the present case, it is clear that applicants' specification satisfies this first test outlined by the CAFC in *Wands*. According to *Wands*, a

considerable amount of experimentation is permissible, if it is merely routine. Looking to applicants' situation, any "experimentation" involved in isolating and characterizing additional nucleic acid molecules falling within the present claims is straightforward, and is rendered so by applicants' discovery of the sequence encoding the grapevine leafroll virus type 3 proteinase gene. Specifically, if one skilled in the art wished to isolate homologous proteinase sequences from other strains of grapevine leafroll virus type 3, they would simply use applicants' disclosed nucleotide sequences as a probe in combination with conventional gene screening methods, such as hybridization. These approaches would require only standard applications of hybridzation wash conditions, and possibly the type of empirical condition adjustments carried out routinely, and successfully, by molecular biologists in isolating a gene. In addition, applicants note that methods for screening recombinant libraries, as well as methods for determining the sequence of an isolated clone, had been routinely used in the art for over 20 years prior to applicants' filing date. For example, in 1975 and 1977, Grunstein and Hogness[2] and Benton and Davis,[3] respectively, provided methods for isolating specific genes from recombinant libraries, and, by at least 1977, Sanger, Nicklen, and Coulson[4] enabled methods for determining the DNA sequences of such isolated genes. Once isolated, the

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[2] Grunstein and Hogness, Colony hybridization: A method for isolating of cloned DNAs that contain a specific gene. *Proc. Natl. Acad. Sci. U.S.A.* 72: 3961, 1975.

[3] Benton and Davis, Screening λgt recombinant clones by hybridization to single plaques *in situ*. *Science* 196: 180, 1977.

[4] Sanger, Nicklen, and Coulsen, DNA sequencing with chain-terminating inhibitor. *Proc. Natl. Acad. Sci. U.S.A.* 74: 5464, 1977.

skilled worker could readily use standard methods to not only express the proteinase polypeptide, but also to determine whether the expressed proteinase polypeptide possessed proteinase activity. None of the aforementioned steps constitutes undue experimentation. Accordingly, there is no basis for concluding that one skilled in the art, equipped with applicants' sequences and standard methods known in the art, would not be able to isolate a reasonable number of grapevine leafroll virus type 3 proteinase genes falling within the scope of the present claims.

Alternatively, applying the second test of *Wands*, a "reasonable amount of guidance" is also provided by applicants' specification. For example, applicants outline general methods useful for identifying and characterizing DNAs encoding additional grapevine leafroll virus type 3 proteinase gene sequences, for example, at pages 18 (line 24) – 20 (line 7). Furthermore, as described on page 7 (lines 24-28), applicants teach that the grapevine leafroll virus type 3 proteinase includes a proteinase domain that is similar to that described for Hepatitis C virus. In view of this teaching, applicants submit that the present specification certainly provides guidance for the screening of recombinant libraries to identify other DNAs encoding grapevine leafroll virus type 3 proteinase polypeptides and that this teaching, in and of itself, is more than adequate to satisfy the requisite "reasonable amount of guidance." Accordingly, based on this second test as well, applicants submit that the present specification is within the bounds set out by *Wands* for an enabling disclosure.

Applicants also note that as the case of *In re Wands* (858 F.2d 731, 8 U.S.P.Q.2d

1400 (Fed. Cir. 1988)) makes clear, enablement is not negated by the necessity for some experimentation such as routine screening. The nature of molecular biology is that it involves screening recombinant libraries to determine which clone within a library contains the gene with the desired characteristics. Like the practitioners of the monoclonal antibody art described in *Wands*, who screened many hybridomas to isolate the one having the desired characteristics, practitioners in the art of molecular biology are prepared to screen many clones to find one that contains a desired gene. Screening of a recombinant library to isolate a grapevine leafroll virus type 3 proteinase gene sequence falling within applicants' claims is considered to be a routine step in the process of isolating a gene having desired characteristics; it cannot constitute undue experimentation.

In sum, armed with applicants' teachings and the disclosed grapevine leafroll virus type 3 proteinase gene, it would be a trivial matter to isolate additional genes from other strains of grapevine leafroll type 3 viruses using the methods outlined in the specification to identified bona fide proteinases. Any "experimentation" involved would be entirely straightforward and routine. Applicants therefore maintain that their specification satisfies the enablement standard under, not one, but both of the alternative tests set forth by *Wands*.

With respect to the issue of whether such grapevine leafroll virus type 3 proteinase genes would confer viral disease resistance, applicants again direct the Examiner to the present specification. As taught, for example, at pages 13-16, the ability of a proteinase

gene sequence to confer viral resistance is easily established using any of a variety of methods, including a straightforward, one-step screening technique. The specification makes clear that broad-spectrum viral resistance is readily obtained by expressing proteinase transgenes at sufficiently high levels to initiate a plant defense response. Accordingly, a skilled worker need only prepare a plant or plant component expressing a gene encoding a grapevine leafroll virus type 3 proteinase, and then evaluate the plant's ability to combat a viral pathogen. Such a single-step screening approach cannot constitute undue trial and error experimentation.

Moreover, even if, as the Examiner suggests, not every grapevine leafroll virus type 3 proteinase would be successful at conferring disease resistance in a plant or plant component, this does not mean the present claims are overbroad. The Federal Circuit has long held that it is not necessary for all possible embodiments of a claim to be operative in order for that claim to be enabled. *See Atlas Powder Co. v. E.I. du Pont de Nemours & Co.*, 750 F.2d 1569, 224 U.S.P.Q. (Fed. Cir. 1984). The proper test of enablement is "whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with the information known in the art without undue experimentation." *Hybritech, Inc. v. Monoclonal Antibodies, Inc.* 802 F.2d. 1318 (Fed. Cir. 1985). In analyzing what constitutes undue experimentation, applicants again note that "[t]he test is not merely quantitative, since a considerable amount of experimentation is permissible, if it is merely routine." *In re Wands*, 858 F.2d 731, 8 U.S.P.Q.2d 1400.

At the time of filing, a skilled artisan, using no more than routine experimentation

and the teachings of the present specification, could easily screen grapevine leafroll virus type 3 proteinases to determine the level of resistance provided by any particular proteinase against a viral plant pathogen. Such screening could easily be accomplished using standard techniques for generating plants expressing such viral proteins and thus does not constitute undue experimentation. The situation is, in all important aspects, indistinguishable from the facts in *Wands* in which the Federal Circuit held that the applicant's claim was enabled, despite the necessity for screening, because the process of screening was straightforward. It follows that the present claims are also enabled, even if some screening would be necessary to identify the particular grapevine leafroll virus type 3 proteinase needed to give the desired level of resistance.

Furthermore, there is nothing in the Vardi or Maiti references cited by the Examiner that would lead one skilled in the art to believe that expression of a grapevine leafroll type 3 viral proteinase would not confer resistance to a viral plant pathogen. In fact, Vardi and Maiti each successfully generated plants expressing genes that conferred viral resistance. Furthermore, such all-encompassing resistance is not necessary for enablement of the claims. The case law is clear that enablement does not require absolute predictability for carrying out all possible embodiments of a claimed method. Rather, the law merely requires that the specification, in combination with the art, provide a description that allows a reasonable number of species falling within the claim to be made and used without undue experimentation. *In re Wands* (858 F.2d 731, 8 U.S.P.Q.2d 1400 (Fed. Cir. 1988).

The Board of Patent Appeals and Interferences recently held a specification to be enabling for integration of a desired gene into fish embryos even though the methods described in the specification had a success rate of only 1%. *Ex Parte Chen*, 61 U.S.P.Q.2d 1025 (Bd. Pat. App. & Interf. 2000). In defending its decision, the Board noted that "the examiner offers no evidence which would reasonably support a conclusion that one skilled in this art would regard this rate of success for integration of the rtGH gene as evidencing undue experimentation. We remind the examiner that some experimentation may be required as long as it is not undue." *Id.* The Board noted that the low success rate for integration of the gene merely demonstrated the need for a repetitive procedure, but was not sufficient to show that undue experimentation was required to practice the invention. *Id.* Since the Patent Office, in this case, has not offered any evidence that the instantly claimed invention would require undue experimentation to practice, it has not carried its burden of showing a reasonable basis to doubt the enablement of the present claims.

In conclusion, applicants submit that the specification adequately describes the methods to be used to practice the invention, commensurate with the scope of the pending claims. Applicants know of no information a practitioner would require to carry out the invention that is not spelled out in detail in the application, or that was not known in the art when the application was filed. Accordingly, applicants respectfully request that the Office reconsider and withdraw the rejection under § 112, first paragraph.

CONCLUSION

Applicants submit that the claims are now in condition for allowance and such action is respectfully requested.

Enclosed is a petition to extend the period for replying for three months, to and including February 28, 2002. If there are any charges or any credits, please apply them to Deposit Account No. 03-2095.

Respectfully submitted,

Date: 28 February 2002

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Version with Markings to Show Changes Made

Amend claims 6, 19-22, 25, and 29, as follows.

6. (Amended) An isolated grapevine leafroll virus RNA molecule encoding a protein or polypeptide [of claim 1] comprising a proteinase domain.

19. (Twice Amended) An expression vector comprising a DNA molecule of [any of] claim[s 7, 10,] 12[, 14, or 16-18].

20. (Amended) The expression [system] vector of claim 19, wherein the heterologous DNA molecule is inserted in sense orientation.

21. (Amended) The expression [system] vector of claim 19, wherein the heterologous DNA molecule is inserted in antisense orientation.

22. (Twice Amended) A host cell transformed with a heterologous DNA molecule of [any of] claim[s 7, 10,] 12[, 14, or 16-18].

25. (Twice Amended) A transgenic plant or transgenic plant component comprising a DNA molecule according to [any of] claim[s 7, 10,] 12[, 14, or 16-18].

29. (Twice Amended) A method for conferring viral disease resistance to a plant or plant component thereof, said method comprising the steps of :

(a) transforming a plant cell with a DNA molecule [according to any] of claim[s 7, 10,] 12[, 14, or 16-18] which is expressed in said plant cell [or plant component]; and

(b) regenerating a [transgenic] plant or [transgenic] plant component thereof from said plant cell, wherein expression of said DNA in said plant or plant component thereof confers viral resistance to said plant or said plant component.

Clean Version of all Pending Claims

6. (Amended) An isolated grapevine leafroll virus RNA molecule encoding a protein or polypeptide comprising a proteinase domain.

12. (Amended) An isolated DNA molecule that hybridizes under highly stringent conditions to the complement of the sequence set forth in SEQ ID NO: 4, wherein said DNA molecule encodes a polypeptide having proteinase activity.

19. (Twice Amended) An expression vector comprising a DNA molecule of claim 12.

20. (Amended) The expression vector of claim 19, wherein the heterologous DNA molecule is inserted in sense orientation.

21. (Amended) The expression vector of claim 19, wherein the heterologous DNA molecule is inserted in antisense orientation.

22. (Twice Amended) A host cell transformed with a heterologous DNA molecule of claim 12.

23. The host cell of claim 22, wherein the host cell is selected from the group of *Agrobacterium vitis* and *Agrobacterium tumefaciens.*

24. The host cell of claim 22, wherein the host cell is a grape cell or a citrus cell.

25. (Twice Amended) A transgenic plant or transgenic plant component comprising a DNA molecule according to claim 12.

26. The transgenic plant or transgenic plant component of claim 25, wherein said transgenic plant component is a scion.

27. The transgenic plant or transgenic plant component of claim 25, wherein said transgenic plant component is a rootstock.

28. The transgenic plant or transgenic plant component of claim 25, wherein said transgenic plant component is a somatic embryo.

29. (Twice Amended) A method for conferring viral disease resistance to a plant or plant component thereof, said method comprising the steps of :

(a) transforming a plant cell with a DNA molecule of claim 12 which is expressed in said plant cell; and

(b) regenerating a plant or plant component thereof from said plant cell, wherein expression of said DNA in said plant or plant component thereof confers viral resistance to said plant or said plant component.

30. The method of claim 29, wherein said plant or plant component is resistant to a grapevine leafroll virus selected from the group of GLRaV-1, GLRaV-2, GLRaV-3, GLRaV-4, GLRaV-5, and GLRaV-6.

31. The method of claim 29, wherein said plant or plant component is resistant to a beet yellows virus, lettuce infectious yellows virus, or citrus tristeza virus.